

PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year) 24.11.2004

Applicant's or agent's file reference
CE10051EP/LL

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/05505

International filing date (day/month/year)
23.05.2003

Priority date (day/month/year)
27.09.2002

Applicant
MOTOROLA INC et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

22 DEC 2004

No due dates added

30 MONTH = 27 MAR 05

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 25 NOV 2004

WIPO PCT



Applicant's or agent's file reference CE10051EP/LL		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/05505	International filing date (day/month/year) 23.05.2003	Priority date (day/month/year) 27.09.2002	
International Patent Classification (IPC) or both national classification and IPC H04Q7/38			
Applicant MOTOROLA INC et al			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 10.05.2004	Date of completion of this report 24.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Hodgins, W Telephone No. +49 89 2399-8987 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/05505

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-30 as originally filed

Claims, Numbers

1-27 received on 27.10.2004 with letter of 25.10.2004

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-27
	No: Claims	
Inventive step (IS)	Yes: Claims	1-27
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-27
	No: Claims	

2. Citations and explanations

see separate sheet

Concerning Point V

- 1) The following documents are cited:

D1: WO 02/073366 A (MASHINSKY ;ROSEN CLIFFORD (US)) 19 September 2002 (2002-09-19)
D2: EP-A-0 888 025 (AT & T CORP) 30 December 1998 (1998-12-30)
D3: WO 02/061968 A (ERICSSON TELEFON AB L M) 8 August 2002 (2002-08-08)
D4: US 2002/087674 A1 (ZHAO HONG ET AL) 4 July 2002 (2002-07-04)
D5: WO 01/59986 A (ERICSSON TELEFON AB L M) 16 August 2001 (2001-08-16)
D6: WO 01/80589 A (LE BODIC GWENAEL ;DUNLOP JOHN (GB); GIRMA DEMESSIE (GB); IRVINE JA) 25 October 2001 (2001-10-25)

- 2) Claim 1 relates to a resource management apparatus for a cellular communication system comprising a resource controller operable to allocate a radio resource to a subscriber unit.

This is of course generally known in the art of cellular communication.

It is known in the art that in addition to the actual operator of a network, a communication system may be utilized by a Mobile Virtual Network Operator (MVNO) who operates as a reseller of the services of the cellular communication system.

The problem to be solved by the current application is how to differentiate between MVNOs and the network operator. This can be achieved through billing levels, customer support etc. However, a technical problem can also be formulated relating to how network resources are split between the different operators.

This problem is overcome according to claim 1 in that the resource controller allocates resource in response to an operator identity associated with a service of the subscriber unit, wherein the resource controller is operable to allocate a first radio resource resulting in a first quality of service if the operator corresponds to a cellular communication system operator and a second radio resource resulting in a different quality of service if the operator identity corresponds to a MVNO.

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EXAMINATION REPORT - SEPARATE SHEET**

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D2 forms the closest prior art. This document describes a method and apparatus for providing partitioned telecommunication service between service providers. D2 foresees that a service provider may also be a MVNO (see column 1 lines 50 - 51). However, D2 teaches how services (eg voice mail) are allocated to subscribers of service providers and not an allocation of radio resource resulting in particular quality of services.

The other citations are less relevant and describe:

- D1: pooling spectrum and network availability from different service providers to provide a dynamic account allocation;
- D3: controlling the quality of service for multiple services (eg voice and data bearers) that share a common resource;
- D4: essentially relates to network selection when roaming;
- D5: relates to resource reservation via a service broker;
- D6: teaches a digital marked place enabling dynamic access to network operators.

Accordingly, there is nothing in the prior art that would lead the skilled man to the problem to be solved by the arrangement of claim 1, let alone to the claimed solution to said problem. Claim 1 is thus novel, inventive and industrially applicable within the meaning of Articles 33(1) - (4) PCT.

- 3) Similar comments to the above apply also to independent claim 25, which relates for the method category to independent apparatus claim 1.

Claim 25 is thus also novel, inventive and industrially applicable within the meaning of Articles 33(1) - (4) PCT.

Similar comments apply to claim 22 relating to a system comprising an apparatus as per claims 1 - 21.

- 4) Owing to their dependencies on the above claims, the dependent claims are also novel, inventive and industrially applicable within the meaning of Articles 33(1) - (4) PCT.
- 5) For the sake of completeness, the following is noted:

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- i) In order to meet the requirements of Article 6 PCT, it seems that some of the dependent claims should have been adapted to amended claims 1 and 25. Moreover, given the requirements in said Article 6 for conciseness, it seems unnecessary to have claims 23 and 24, since claim 22 is dependent upon any of claims 1 to 21 and thus comprises these features any way.
- ii) The independent claims should have been put in the two part form recommended by Rule 6.3(b) PCT with a pre-characterising part reflecting the teachings of the closest prior art.
- iii) In order to meet the requirements of Rule 6.2(b) PCT reference signs in parenthesis should have been added to the claims. This applies both to the pre-amble and to the characterising part, and to method claims in as far as they refer to apparatus features.
- iv) In order to meet the requirements of Rule 5.1(a)(ii) PCT, at least the documents D2 and D3 should have been cited in the description and briefly discussed.
- v) The description should have been brought into conformance with the newly filed claims. In this respect it is noted that not only the part of the description according to Rule 5.1(a)(iii) PCT but also that part according to Rule 5.1(a)(v) PCT requires some amendment, in particular in the light of the repeated use of the work "embodiment" throughout and in the light of the final paragraphs, some of which seem to correspond closely to the claimed subject matter.

CLAIMS

1. A resource management apparatus for a cellular communication system; comprising

5 a resource controller operable to allocate a radio resource to a subscriber unit in response to an operator identity associated with a service of the subscriber unit,

wherein the resource controller is operable to allocate a first radio resource resulting in a first quality of service if the operator corresponds to
10 a cellular communication system operator and a second radio resource resulting in a different quality of service if the operator identity corresponds to a Mobile Virtual Network Operator.

2. The resource management apparatus as claimed in claim 1 wherein
15 the cellular communication system has a common radio access network resource divided into a first partition for a first operator and a second partition for a second operator, and the resource controller is operable to allocate resource from the first partition if the operator identity corresponds to the first operator and from the second partition if the
20 operator identity corresponds to the second operator.

3. The resource management apparatus as claimed in claim 2, wherein the resource management controller comprises:

control means for independently controlling at least one quality of
25 service parameter associated with the first partition of the common radio access network resource in response to a first preference parameter of the first operator, and at least one quality of service parameter associated with the second partition of the common radio access network resource in response to a second preference parameter of the second operator.

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4. The resource management apparatus as claimed in claim 3 wherein the at least one quality of service parameter comprises at least one radio access network parameter chosen from the group of:

- a) a call blocking rate;
- 5 b) a call drop rate;
- c) an error rate;
- d) a delay;
- e) a throughput fairness; and
- f) a power control target.

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5. The resource management apparatus as claimed in claim 3 or 4, wherein the control means comprise a first quality of service controller for independently controlling the at least one quality of service parameter associated with the first partition and a second quality of service controller
15 for independently controlling the at least one quality of service parameter associated with the second partition.

6. The resource management apparatus as claimed in claim 5 wherein the first quality of service controller comprises first input means for
20 receiving control input from the first operator and the second quality of service controller comprises second input means for receiving control input from the second operator.

7. The resource management apparatus as claimed in claim 6 wherein
25 each of the first and second quality of service controllers has an individually associated operations and maintenance controller.

8. The resource management apparatus as claimed in claim 5 to 7 wherein the first quality of service controller comprises a first resource
30 allocator for allocating resource associated with the first partition and the second quality of service controller comprises a second resource allocator for allocating resource associated with the second partition.

9. The resource management apparatus as claimed in claim 8 wherein the first and second resource allocators comprise a traffic scheduler.
- 5 10. The resource management apparatus as claimed in claim 8 wherein the first and second resource allocators comprise admission controllers.
11. The resource management apparatus as claimed in claim 5 to 10 wherein the first quality of service controller comprises a first power
10 control controller for controlling transmit powers associated with the first partition and the second quality of service controller comprises a second power control controller for controlling transmit powers associated with the second partition.
- 15 12. The resource management apparatus as claimed in claim 3 to 11 wherein the control means is operable to control the at least one quality of service parameter associated with the first partition and the at least one quality of service parameter associated with the second partition in
20 response to at least one common parameter for the first and second partition.
13. The resource management apparatus as claimed in claim claimed in claim 12 wherein the at least one common parameter is a total resource usage for the first and second partition.
- 25 14. The resource management apparatus as claimed in any of the previous claims 2 to 13 wherein the partitioning of resource in said first and second partition is different in different regions.
- 30 15. The resource management apparatus as claimed in any of the previous claims 2 to 14 wherein the resource management apparatus

comprises means for dynamically varying the partitioning of resource into said first and second partition.

- 5 16. The resource management apparatus as claimed in claim 15 wherein the partitioning of resource into the first and second partition is in response to a resource usage in said first and second partition.
- 10 17. The resource management apparatus as claimed in any of the previous claims 2 to 16 wherein the resource management apparatus further comprises means for presenting relative usage levels of the first and second partition respectively.
- 15 18. The resource management apparatus as claimed in any of the previous claims 2 to 17 wherein both the first and second partition comprises resource associated with equipment shared between the first and second operator.
- 20 19. The resource management apparatus as claimed in any of the previous claims 1 to 18 wherein the radio resource comprises a frequency resource.
- 25 20. The resource management apparatus as claimed in any of the previous claims 1 to 19 wherein the radio resource comprises a code resource.
- 30 21. The resource management apparatus as claimed in any of the previous claims 1 to 20 wherein the radio resource comprises a power resource.
22. A cellular communication system comprising a resource management apparatus as claimed in any of the previous claims.

23. A cellular communication system as claimed in claim 22 further comprising means for associating the operator identity to a service of a subscriber unit when initiating the service.

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24. A cellular communication system as claimed in claim 22 or 23 wherein a radio access network is shared between the different operators.

25. A method of resource management in a cellular communication system; comprising

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allocating a radio resource to a subscriber unit in response to an operator identity associated with a service of the subscriber unit,

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wherein the step of allocating comprises allocating a first radio resource resulting in a first quality of service if the operator corresponds to a cellular communication system operator and a second radio resource resulting in a different quality of service if the operator identity corresponds to a Mobile Virtual Network Operator.

26. A method of resource management as claimed in claim 25 wherein the cellular communication system has a common radio access network resource divided into a first partition for a first operator and a second partition for a second operator and the step of allocating a radio resource comprises allocating resource from the first partition if the operator identity corresponds to the first operator and from the second partition if the operator identity corresponds to the second operator.

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27. A method of resource management as claimed in claim 26 wherein the step of allocating a radio resource comprises independently controlling at least one quality of service parameter associated with the first partition of the common radio access network resource in response to a first preference parameter of the first operator, and at least one quality of service parameter associated with the second partition of the common

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radio access network resource in response to a second preference
parameter of the second operator.